REMARKS

This Amendment and Response is submitted in response to the Office Action mailed 24 JUNE 2003. Withdrawal of the rejection and reconsideration with an eye toward allowance is respectfully requested.

Claim Status

Claims 36-39, 45-47, 49, 50, and 52-56 are pending. Claims 36, 37, 45-47, 49, 50, and 53 stand rejected, claims 38, 39 and 52 were objected to by the Examiner. Claim 45 is amended herein to provided proper antecedent basis from independent claim 36. Claims 54-56 are added herein. A complete listing of all claims that are, or were in the application, along with an appropriate status identifier, is provided above in the section entitled "Amendments to the Claims". Markings are provided on claims amended in the present amendment. No new matter is entered.

Drawings

The Examiner has approved the proposed drawing correction filed on 2 May 2003, and requests a proper drawing correction or corrected drawings in reply to the Office Action. Applicants submitted formal drawings, incorporating the approved drawing correction with the last response mailed April 28, 2003. Accordingly, Applicants submit the drawings are in condition for allowance. For the Examiner's convenience, a further copy of those formal drawings is enclosed.

Claim Rejections – 35 U.S.C. §112

Claims 45 to 47 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that claim 45 recites "said detection module" which does not have proper antecedent basis in claim 36. Applicants have amended claim 45 to recite "said detection well", which finds antecedent basis in claim 36. Applicants submit that this amendment does not narrow the scope of the claim. Applicants trust that the amendment overcomes the rejection of claims 45 to 47 under 35 U.S.C. §112.

Claim Rejections – 35 U.S.C. §102

Claims 36, 37, 49, 50, and 53 were rejected under 35 U.S.C. §102(e) as being anticipated by Segal et. al. (U.S. Patent Number 6,300,141).

Applicants respectfully submit that a declaration by the inventor Jon F. Kayyem, submitted with Applicants response and amendment mailed April 28, 2003 has established invention of the subject

matter of claims 36, 37, 49, 50, and 53 prior to the effective date of the Segal reference (see 37 C.F.R. § 131).

The Segal reference has a filing date of March 2, 2000, and claims priority to Provisional Application No. 60/122,546, filed March 2, 1999. Accordingly, the earliest possible effective date of the Segal reference is March 2, 1999. To show invention of the subject matter prior to the effective date of the reference, Applicants are required to establish "conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application." (37 C.F.R. §1.131(b). Accordingly, a showing of conception of the invention prior to March 2, 1999 coupled with due diligence from prior to March 2, 1999 through the April 21, 1999 filing date of the present application would be sufficient to antedate the Segal reference. "Priority, conception, and reduction to practice are questions of law which are based on subsidiary factual findings" *Cooper v. Goldfarb*, 47 USPQ2d 1896 (Fed. Cir. 1998), citing *Hybritech Inc. v. Monoclonal Antibodies, Inc.* 231 USPQ 81 (Fed. Cir. 1986).

First, Applicants show conception of the invention of claims 36, 37, 49, 50, and 53 prior to March 2, 1999. "Conception is the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Cooper,* 47 USPQ2d at 1901, citing *Hybritech* 213 USPQ at 87. "Thus, the test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention." *Burroughs Wellcome Co. v. Barr Laboratories Inc.* 32 USPQ2d 1915, 1919 (Fed. Cir. 1994).

A portion of Applicants' arguments from the response and amendment mailed April 28, 2003 are repeated below for reference.

Notes from a meeting prior to March 2, 1999 are attached as Exhibit 1. The notes indicate that microfluidics were discussed, and further that the combination of microfluidics and CMS technology was contemplated. In particular, separation and sample preparation were discussed, as indicated by the annotations 'separation' and 'sample preparation', shown in Exhibit 1. The specification of the present application at page 11, lines 4-5 indicates that a separation module is one type of handling module.

As outlined in the enclosed declaration by Jon Kayyem, at the time the notes were made, 'CMS technology' refers to electronic detection methods such as those outlined in Exhibits 2-6. As stated in the declaration, 'CMS technology' on or before March 2, 1999, included a detection well with a detection electrode having a self-assembled monolayer and a capture binding ligand. Further, as stated in the declaration, CMS technology included biochips having an inlet port, a detection well, and a channel between the inlet port and the detection well. It does not appear that the definition of "microfluidics" is at issue, due to the large usage of the term for many years. However, just for completeness, Applicants submit that microfluidic technology was widely publicly available prior to March 2, 1999 and included a solid support member, sample handling well, sample inlet port, and microchannels, as evidenced at least by Wilding et. al., U.S. Patent Number 5,304,487, issued April 19, 1994.

The Examiner states in the office action mailed June 24, 2003 that Applicants have failed to overcome the rejection for several reasons. First, the Examiner states that exhibit 1 is merely a short list of handwritten notes, some parts of which the Examiner could not read. Applicants respectfully submit that the handwritten notes were provided as evidence to corroborate the statement of Jon F. Kayyem in his declaration under 37 C.F.R. §1.131 that prior to March 2, 1999, the basic concept of a microfluidic device for the detection of analytes was conceived. Indeed, the Examiner concedes that Exhibit 1 does disclose the general idea of combining the applicant's detector technology with a microfluidic device (see office action, page 5). Accordingly, Applicants respectfully submit that the handwritten nature of the exhibit or the Examiner's difficulty in reading portions of the exhibit are irrelevant to the purpose of the exhibit which is to corroborate Kayyem's statement in the declaration and to demonstrate, as the Examiner concedes, that Applicant had conceived of combining the detector technology with a microfluidic device.

The Examiner further states that Exhibit 6 is a copy that is too poor to see any of the recited structure. Applicants have accordingly enclosed a higher fidelity copy of Exhibit 6.

The Examiner further states that Exhibits 1 and 6 fail to support the detailed structure of the microfluidic device(s) recited in the claims. Independent claim 36 recites "a) a solid support member; b) a sample handling module including a sample handling well formed in said support member to receive and store said sample; c) a sample inlet port to said microfluidic device; d) a first microchannel formed in said support member coupled to and extending between said sample handling well and said sample inlet port; e) a detection well formed in said support member and a detection electrode positioned in said detection well, said detection electrode being provided with a self-assembled monolayer; and a binding ligand; and, f) a second microchannel formed in said support member and extending between said sample handling well and said detection well for the flow of said fluid sample there between."

CMS technology at the time included biochips having an inlet port, a detection well, and a channel between the inlet port and the detection well, as stated in the declaration and shown at least in Exhibit 6. Also, as stated in the declaration and corroborated by the attached exhibits, CMS technology further included a detection well with a detection electrode having a self-assembled monolayer and a capture binding ligand. Further, Exhibit 2 states "Ultimately, the company intends to integrate lysis of the specimen and presentation of the nucleic acid into the system".

Further, the Examiner's attention is drawn to M.P.E.P. §715.03 'General Rule as to Generic Claims' stating that "A reference or activity applied against generic claims may (in most cases) be antedated as to such claims by an affidavit or declaration under 37 C.F.R. §1.131 shown completion of the invention of only a single species, within the genus, prior to the effective date of the reference or activity." See *Ex parte Biesecker*, 144 USPQ 129 (Bd. App. 1964). See also *In re Fong*, 288 F.2d 932, 129 USPQ 264 (CCPA 1961); *In re Defaco*, 392 F.2d 280, 157 USPQ 192 (CCPA 1968).

As stated above, Exhibit 1 indicates that microfluidics were discussed, and further that the combination of microfluidics and CMS technology was contemplated. In particular, separation and

sample preparation were discussed, as indicated by the annotations 'separation' and 'sample preparation', shown in Exhibit 1. The specification of the present application at page 11, lines 4-5 indicates that a separation module is one type of handling module. Thus the declaration and exhibit show conception of a device with both a detection module and a handling module.

Thus, as between Exhibits 1 and 6, Applicants submit that the combination of CMS technology and the idea of separation and sample preparation were contemplated. As these things are included in the broad definition of a handling module, this would be included in the scope of a 'sample handling well', as recited in claim 36. Accordingly, Applicant submits that the subject matter of the claims is supported by Applicant's 131 showing including the Declaration of Jon F. Kayyem and supporting Exhibits 1-6.

Applicants respectfully submit that conception of the invention has been firmly established, involving a" formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice" *Cooper,* 47 USPQ2d at 1901, citing *Hybritech* 213 USPQ at 87.

Applicants have then shown, at least by the 37 CFR §1.131 Declaration of Kayyem, diligence from prior to March 2, 1999 through the constructive reduction to practice by the filing of the instant application on 21 April 1999. Accordingly, Applicants respectfully submit that the 35 U.S.C. §102(e) rejection of claims 36, 37, 49, 50 and 53 is improper, and should be withdrawn.

Allowable Subject Matter

Applicants note with appreciation the Examiner's finding of allowable subject matter in claims 38, 39, 45-47, and 52. Claims 38, 39, and 52 were objected to as being dependent upon a rejected base claim. Applicants submit, as discussed above, that base claim 36 is also allowable. Applicants have amended claim 45 such that claims 45-47 are now free from rejection under 35 U.S.C. §112, second paragraph.

New Claims

Applicants have added new claims 54-56. The new claims distinguish over the cited art. For example, claims 54 and 56 recite an electron transfer moiety. Claim 55 recites a reaction module. Other features of the new claims further distinguish over the cited art.

CONCLUSION

Applicants submit the claims are in condition for allowance, and notification of such is respectfully requested. If after review, the Examiner feels there are further unresolved issues, the Examiner is invited to call the undersigned at (415) 781-1989.

Respectfully submitted,
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